Title: Programming the Universe

Date: Apr 19, 2006 07:00 PM

URL: http://pirsa.org/06040020

Abstract: The universe computes: every atom, electron, and elementary particle registers bits of information, and every time two particles collide those bits are flipped and processed. By Â‘hackingÂ’ the computational power of the universe, we can build quantum computers which store and process information at the level of atoms and electrons. This computational capacity underlies the generation of complex systems, and provides insight into the origin of life and its future. Seth Lloyd is a professor in the Department of Mechanical Engineering at the Massachusetts Institute of Technology (MIT). He is the author of \'Programming the Universe: A Quantum Computer Scientist Takes On the Cosmos\' which asks the startling question \'Is the universe actually a giant quantum computer?\'. <kw> Programming the Universe, Seth Lloyd, capacitor, information processing, Big Bang, quantum computer, quantum mechanics, wave-particle duality, Schrodinger, complex universe, algorithmic, decode </kw>

Seth Lloyd

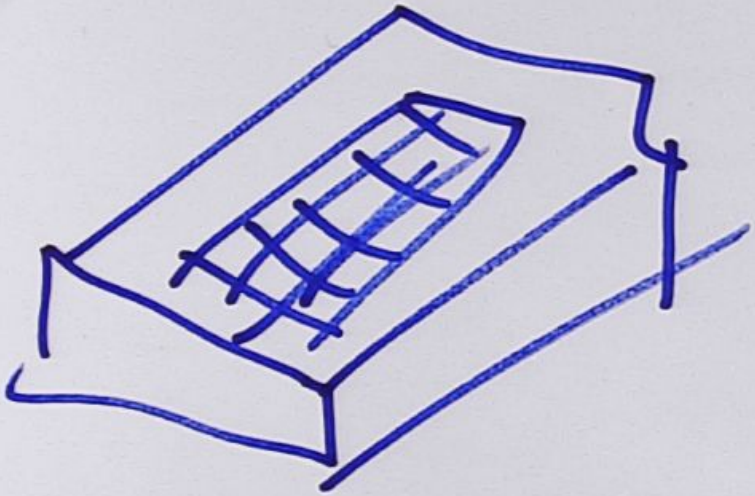
Professor, MIT

Programming the Universe

April 19, 2006

Bloor Collegiate, Toronto

PERIMETER INSTITUTE FOR THEORETICAL PHYSICS

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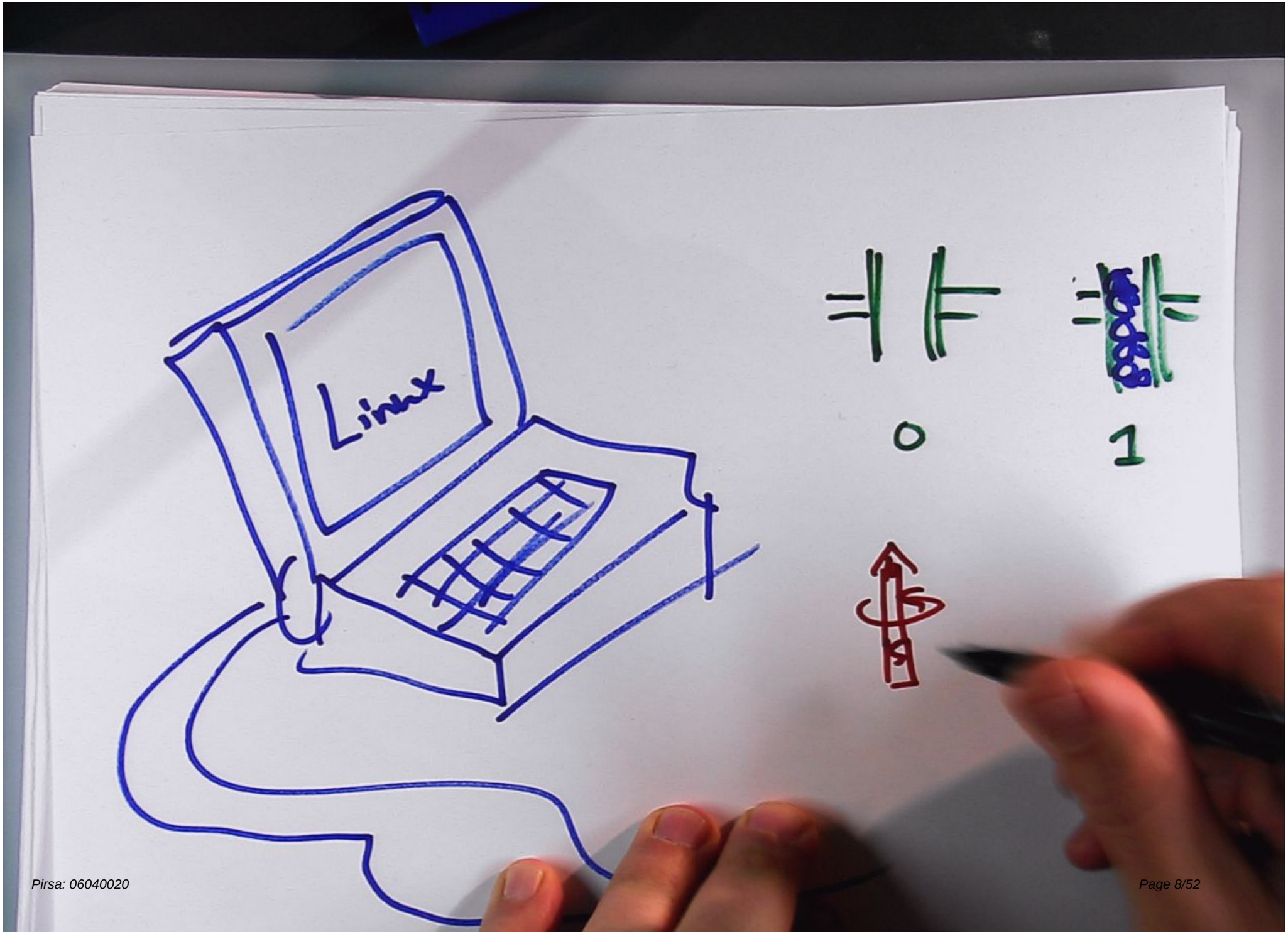
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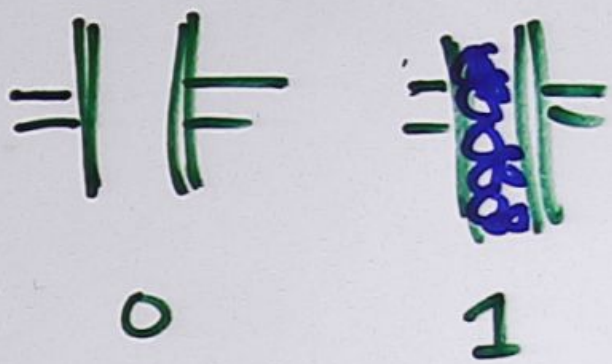
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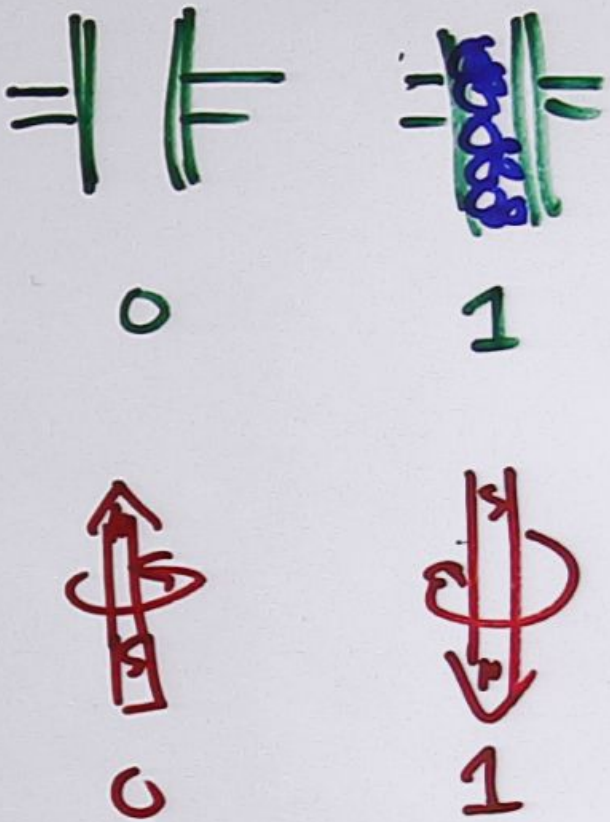
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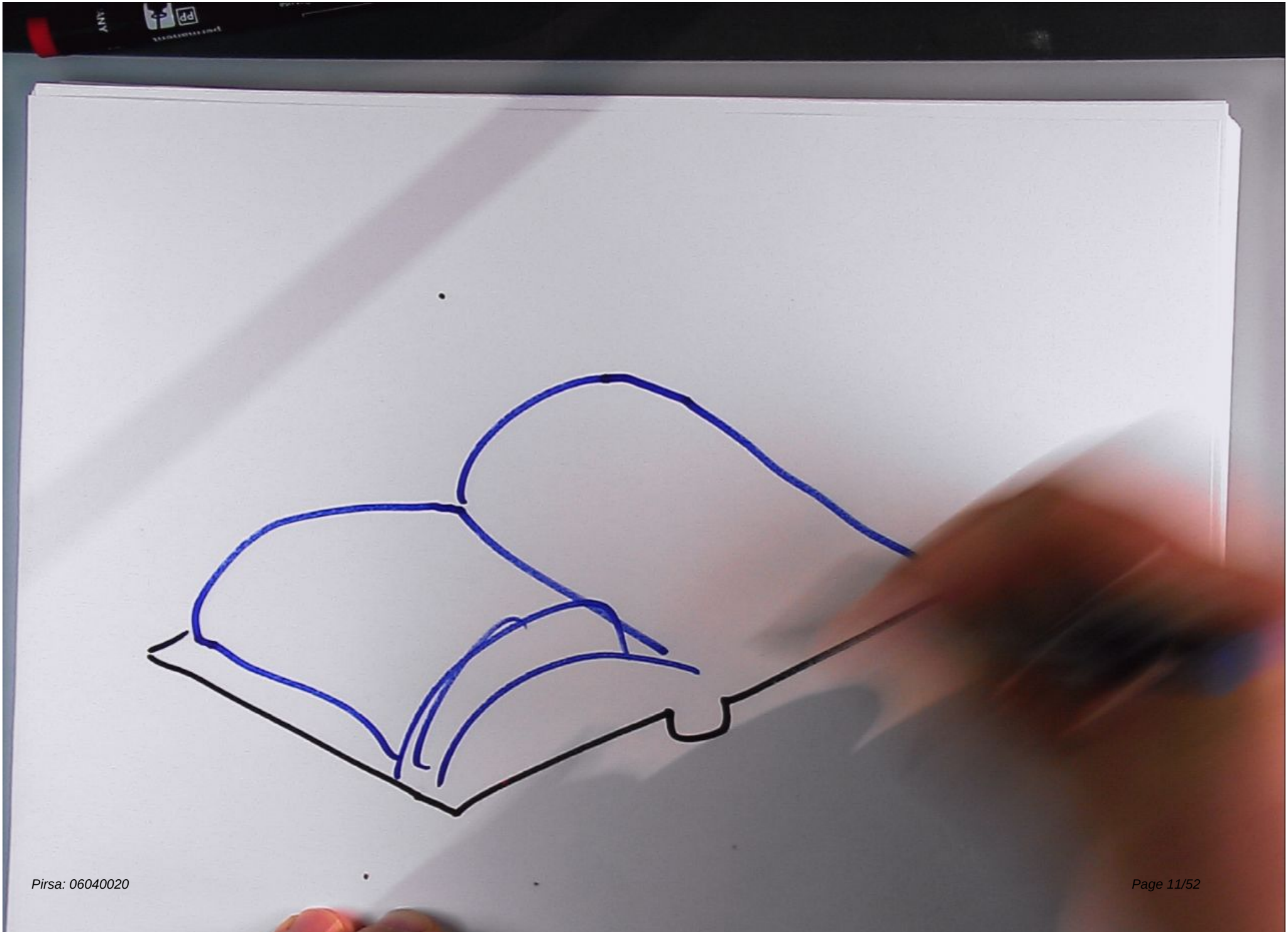

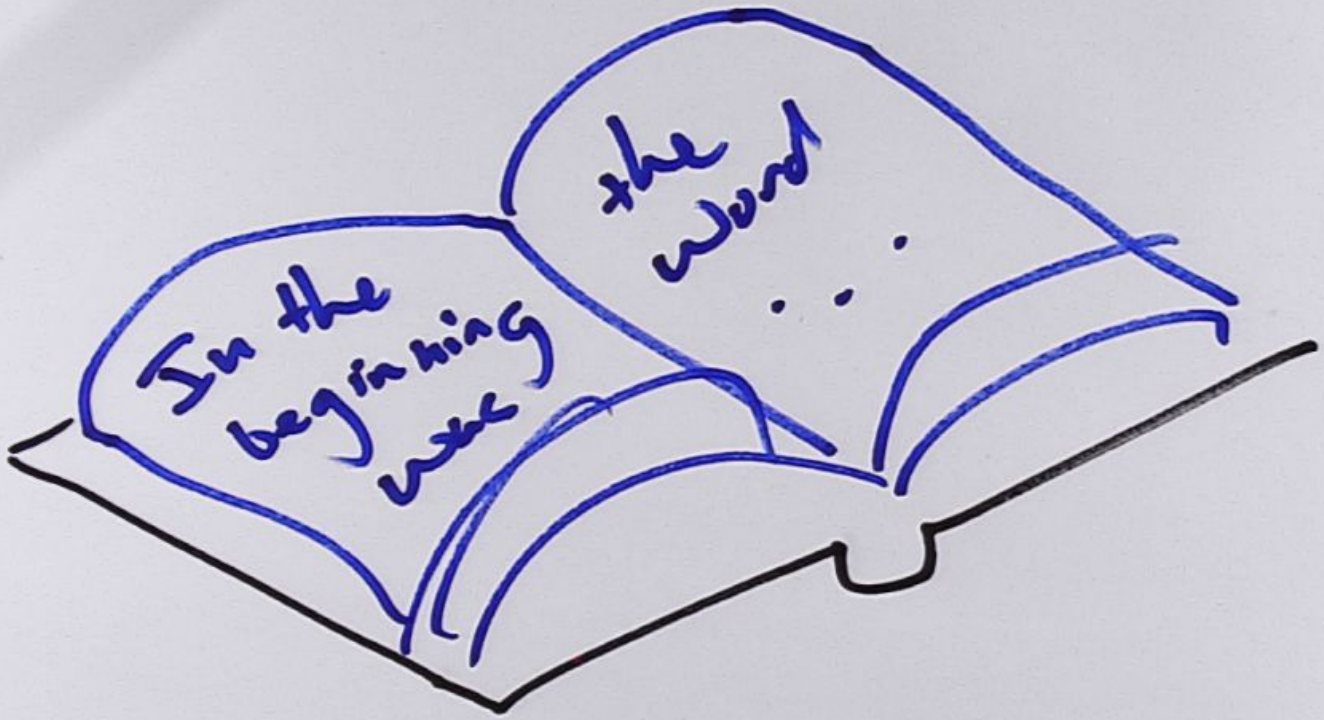
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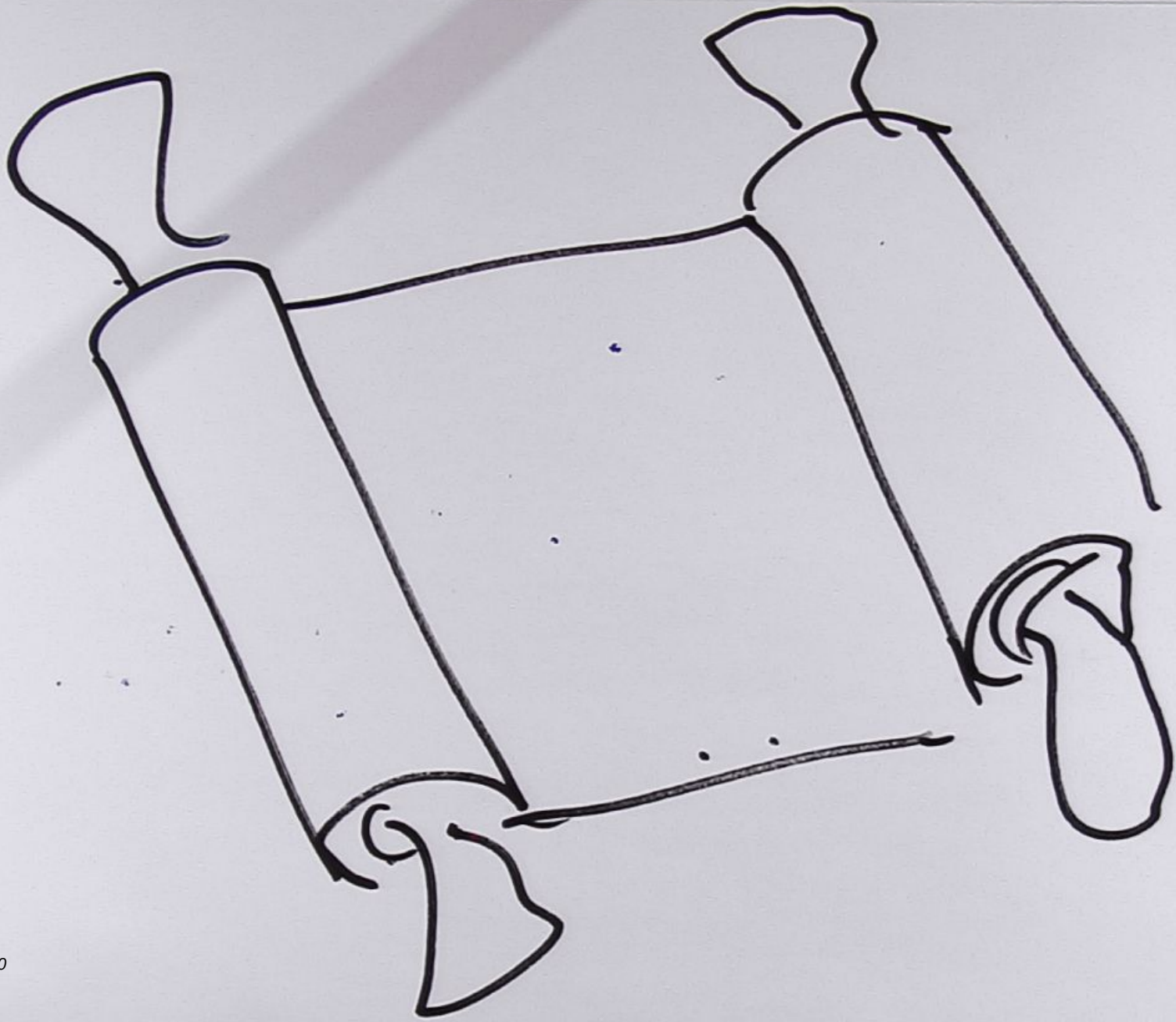

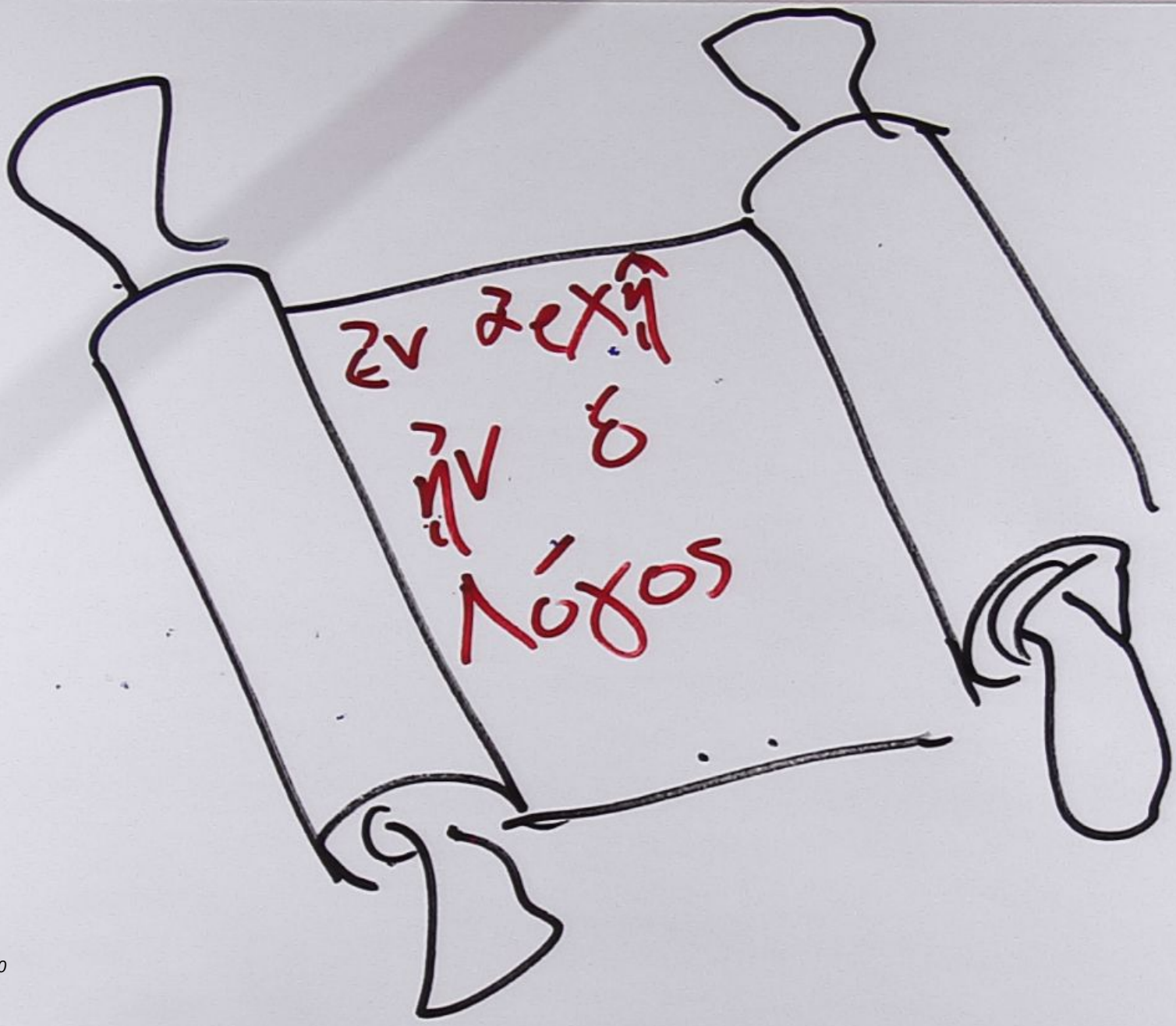
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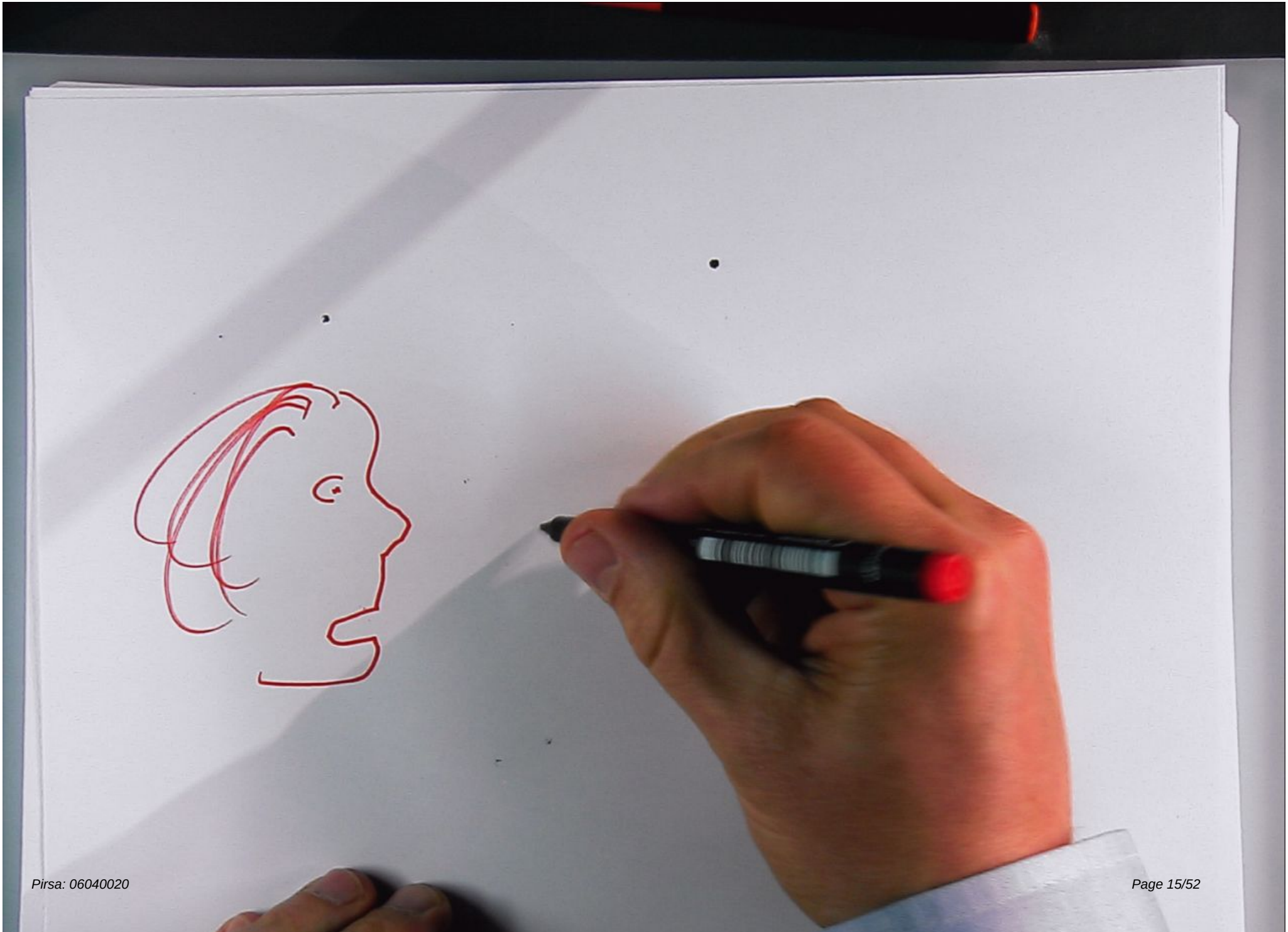

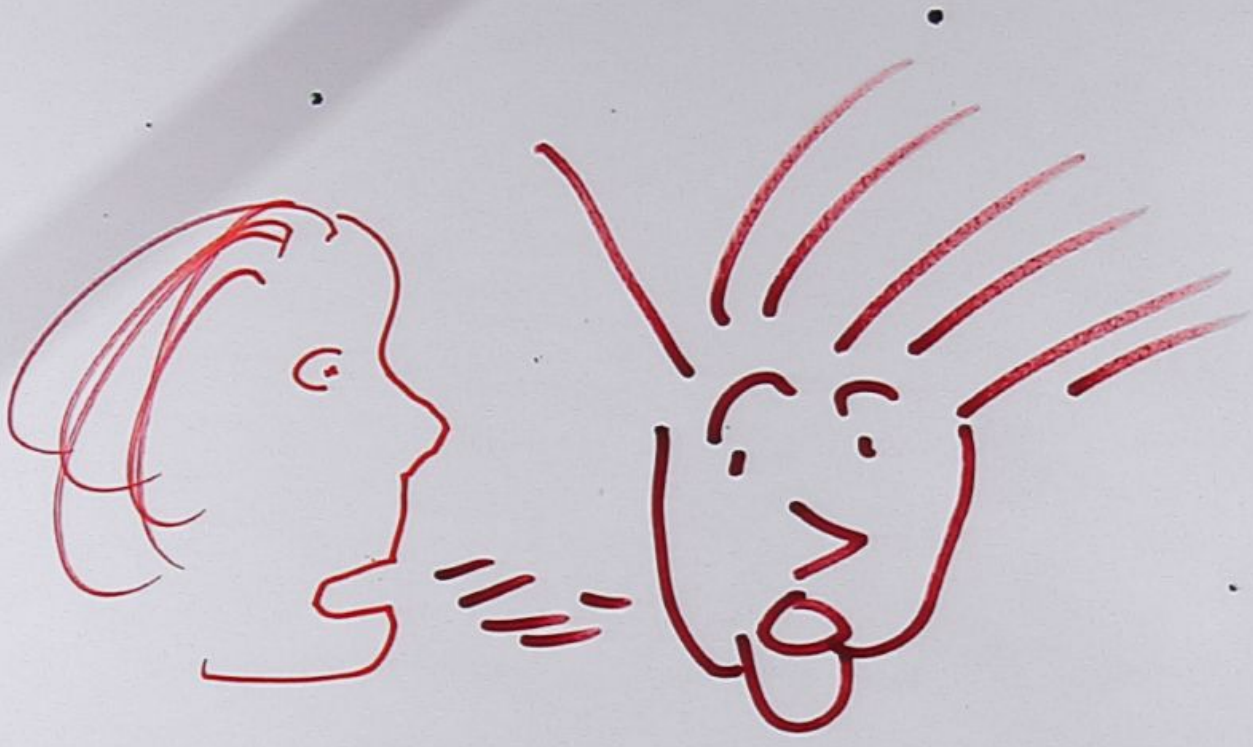

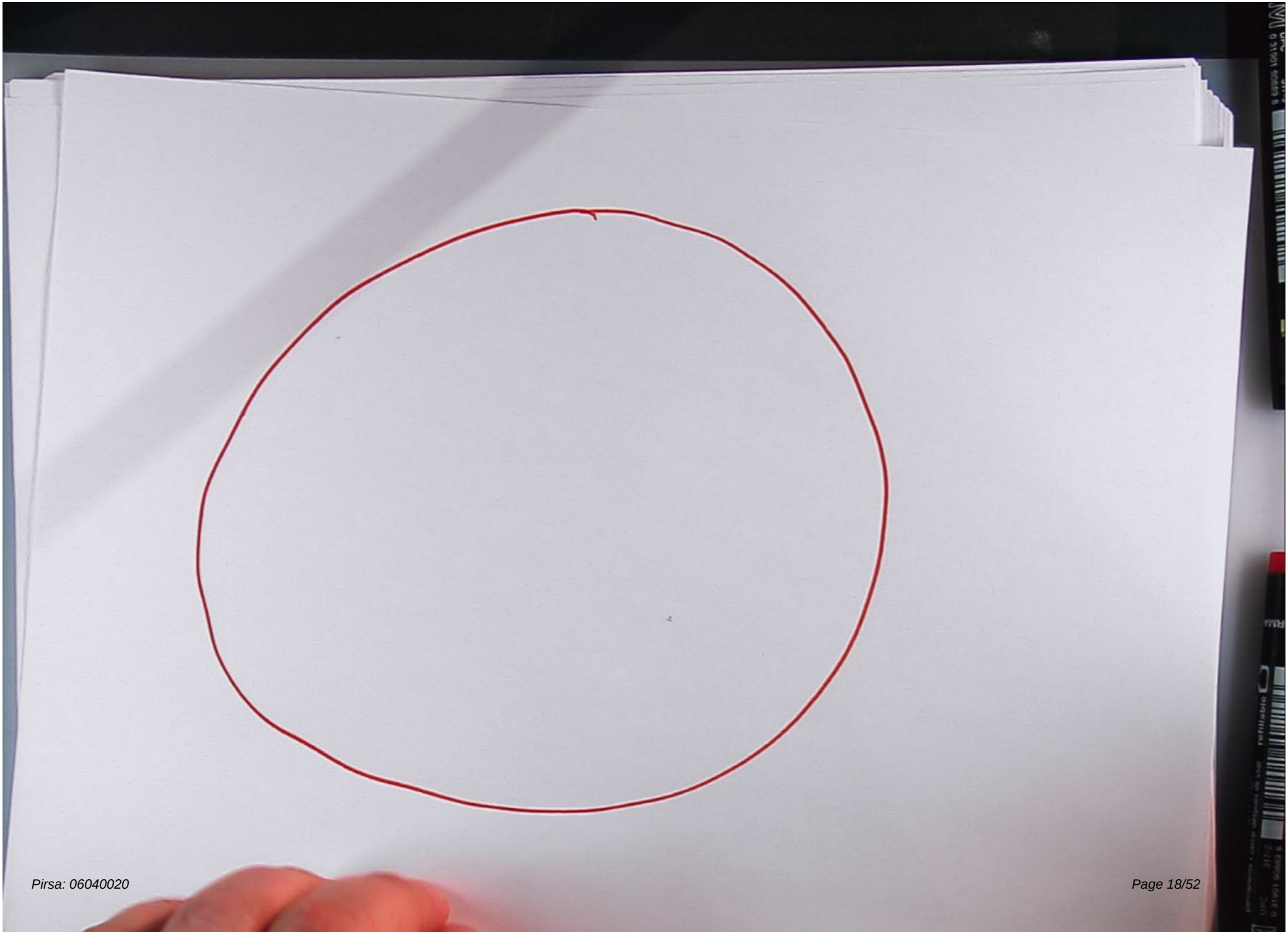

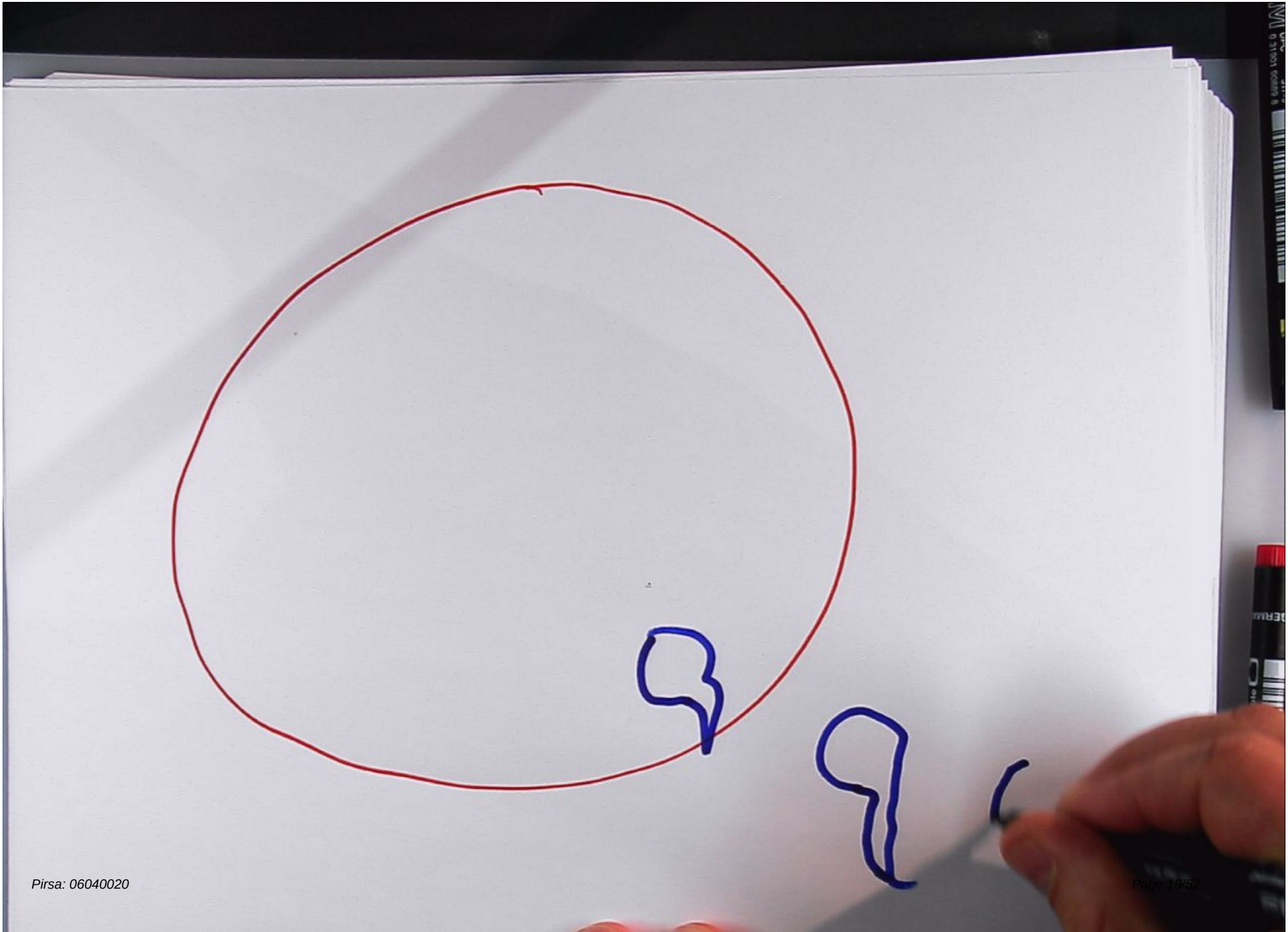

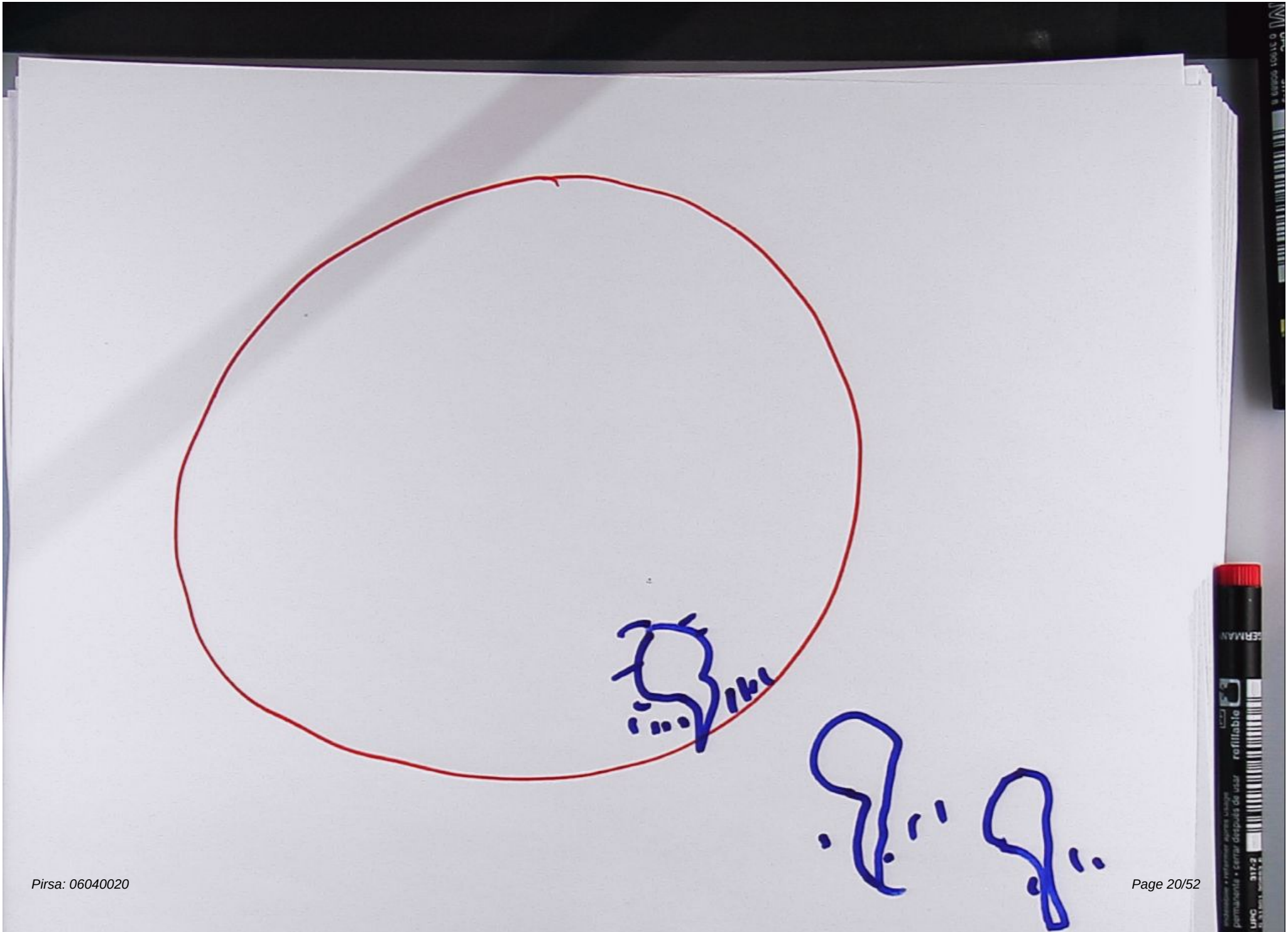

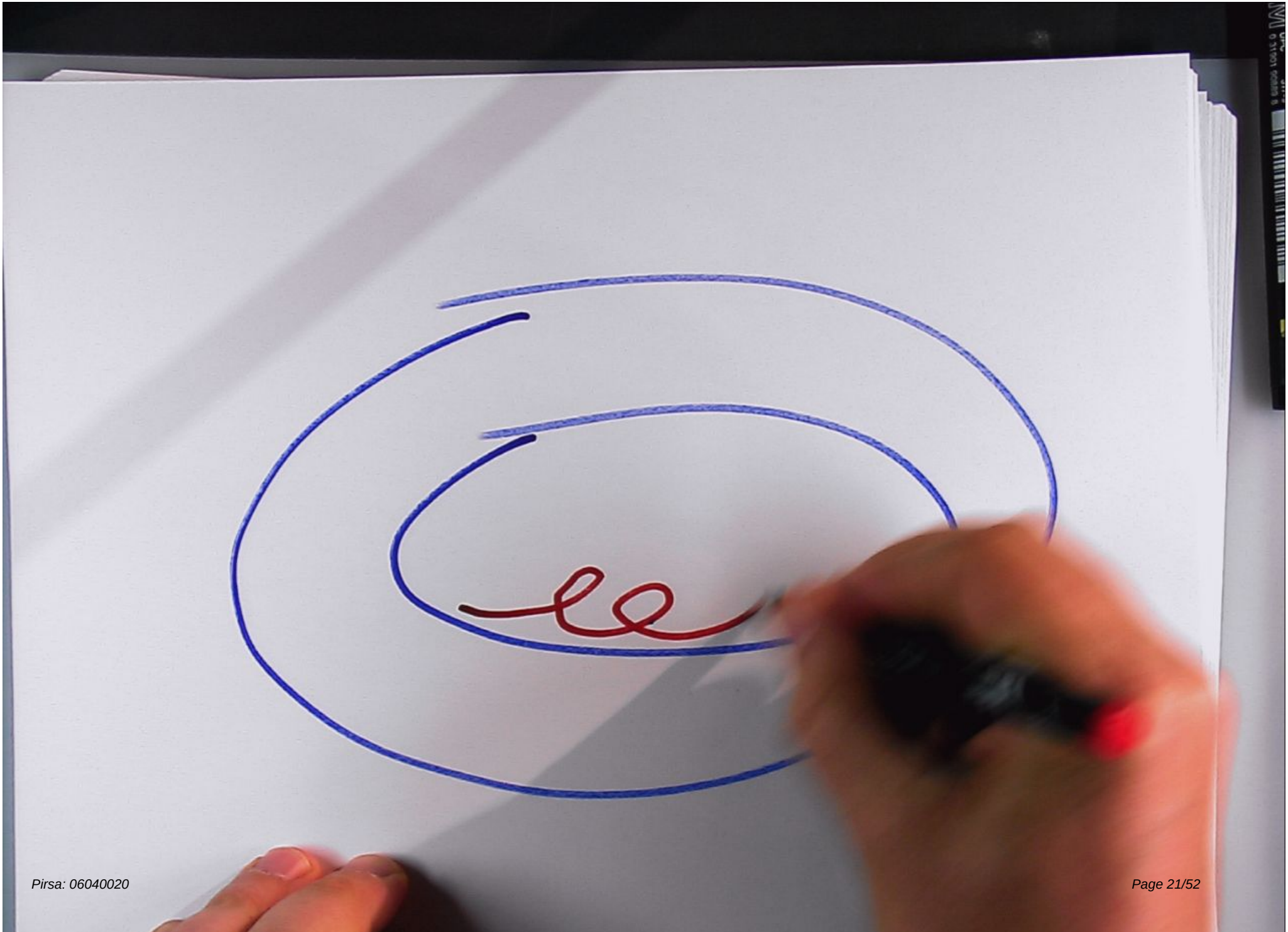

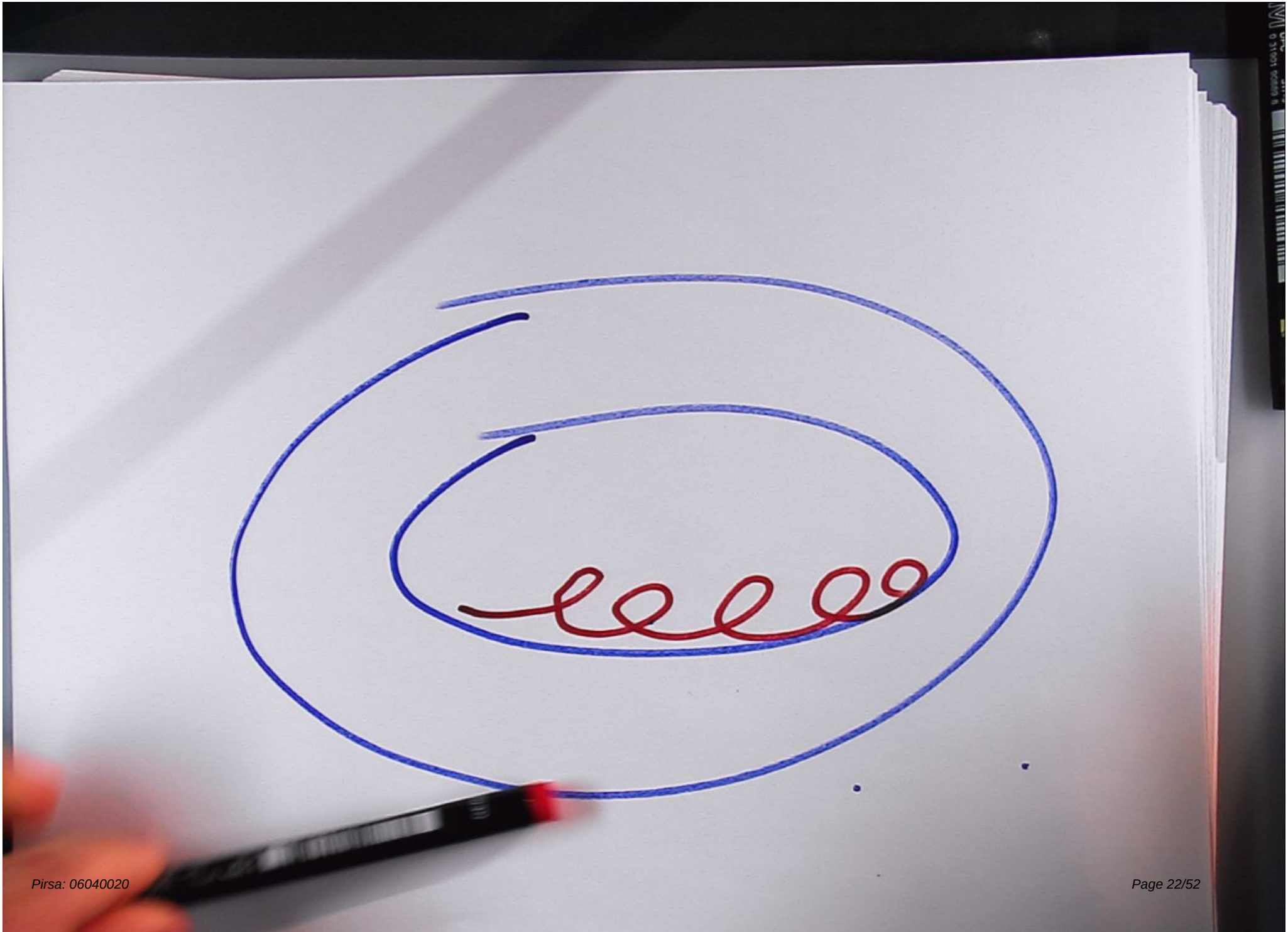


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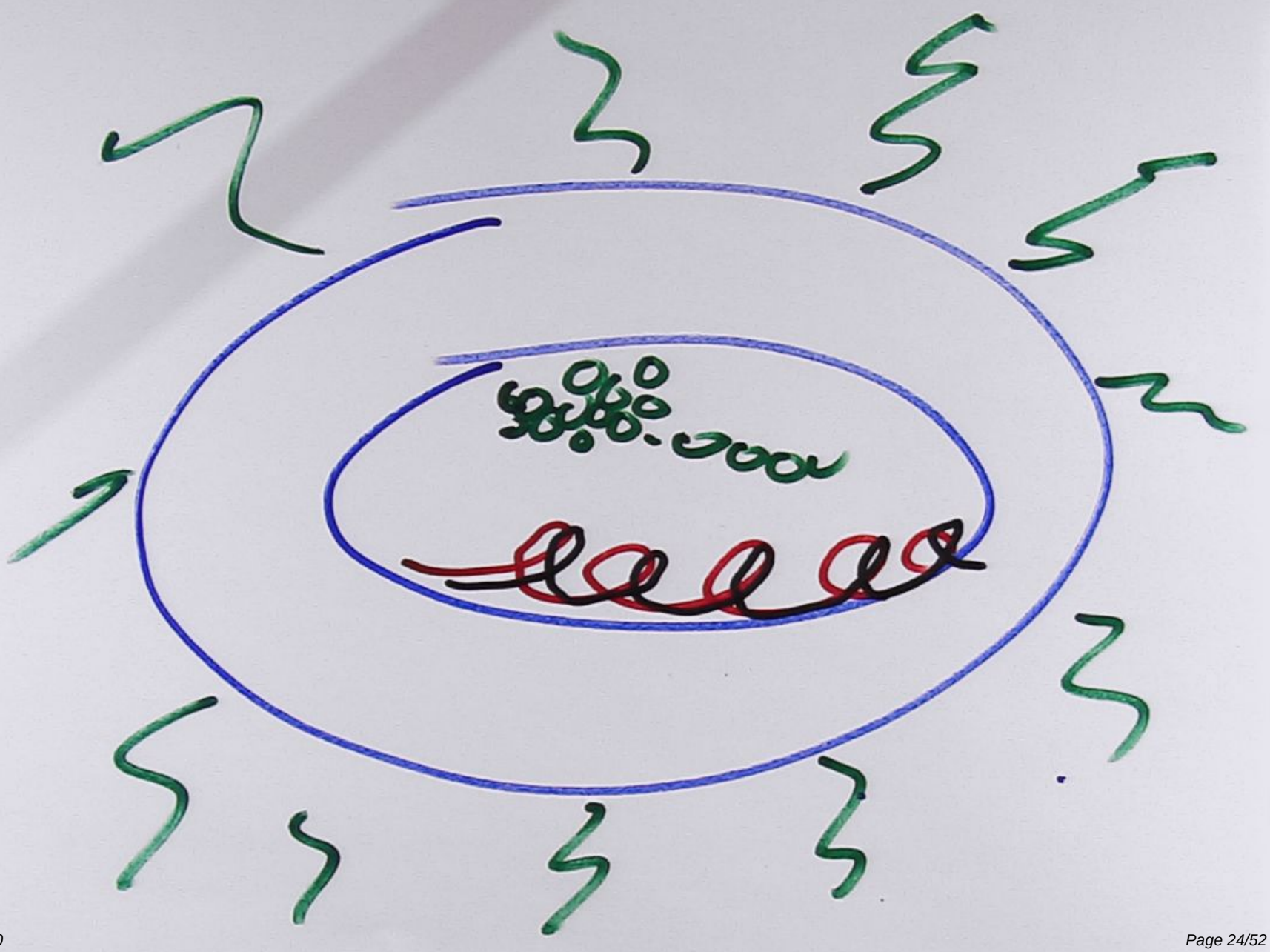
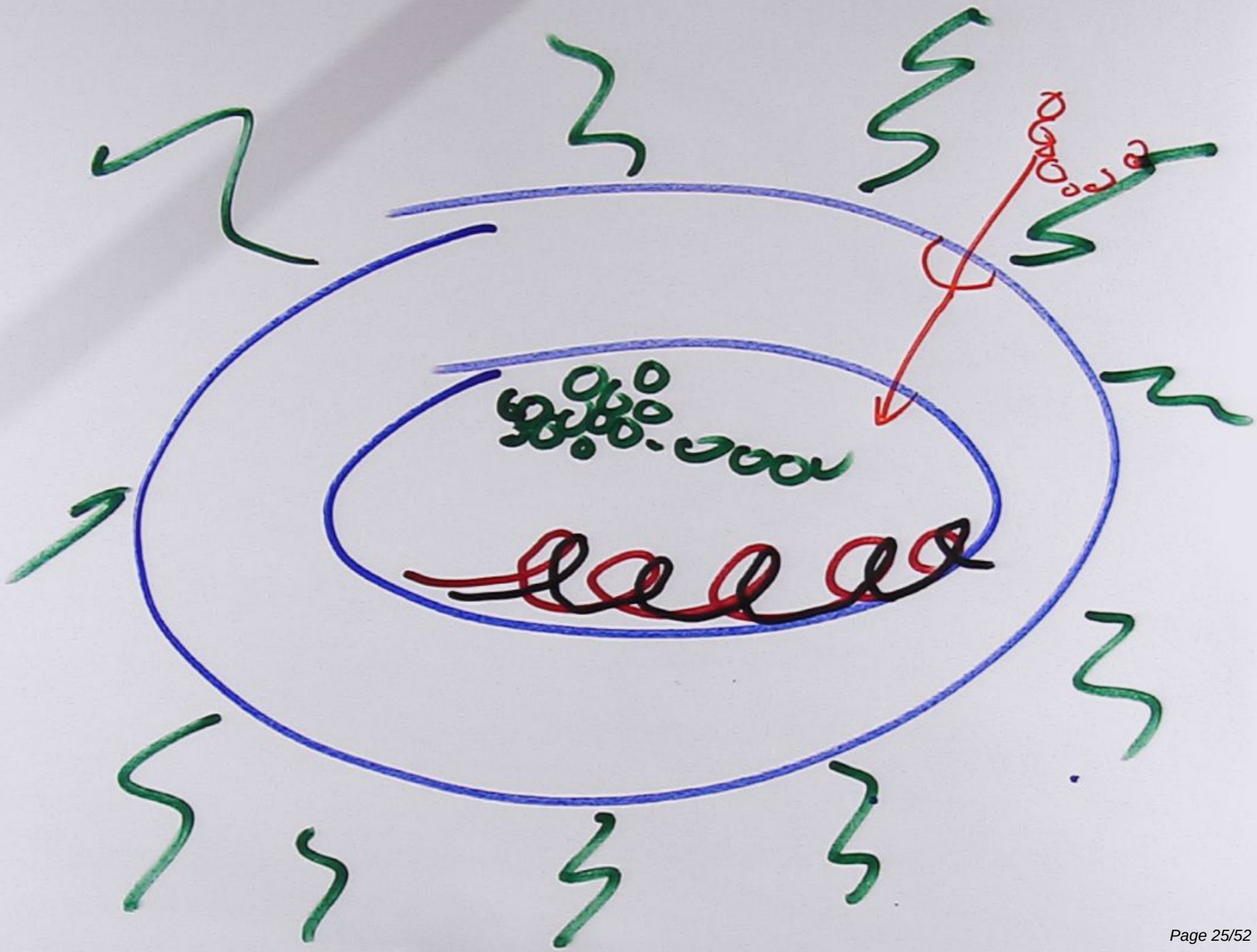




Quantum mechanics —

Quantum mechanics —

Wave – particle duality

Quantum mechanics —

Wave – particle duality

light
sound

Quantum mechanics —

Wave – particle duality

light
sound

photons
phonons
electrons
atoms

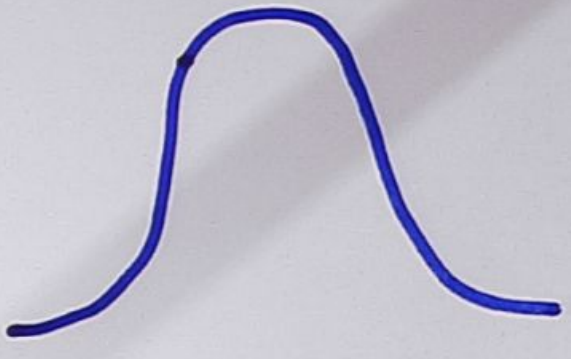
Quantum mechanics —

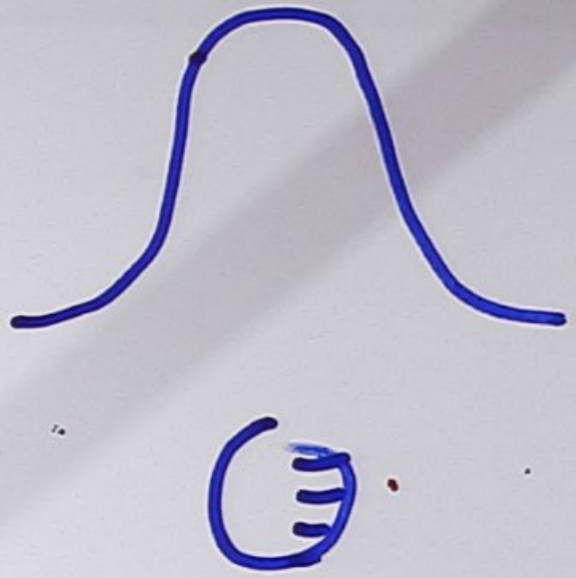
Wave – particle duality

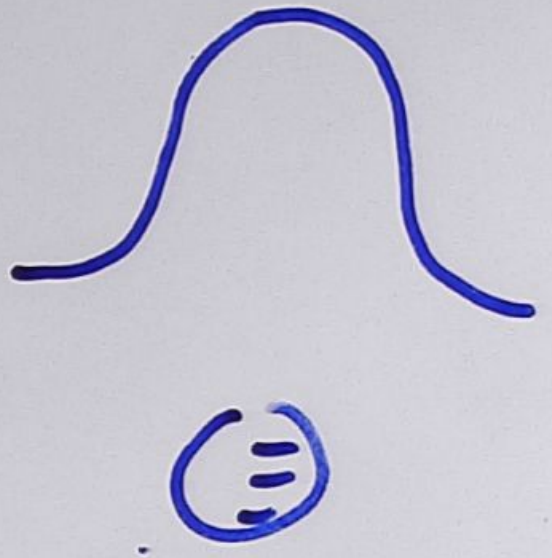
light
sound

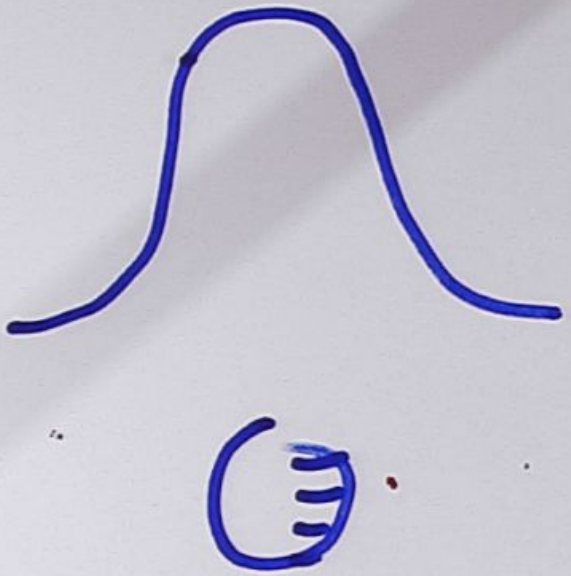
photons
phonons
electrons
atoms

Schrödinger eqn.









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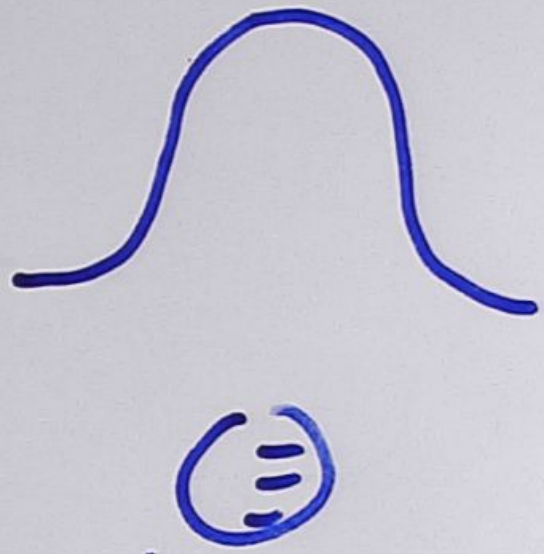

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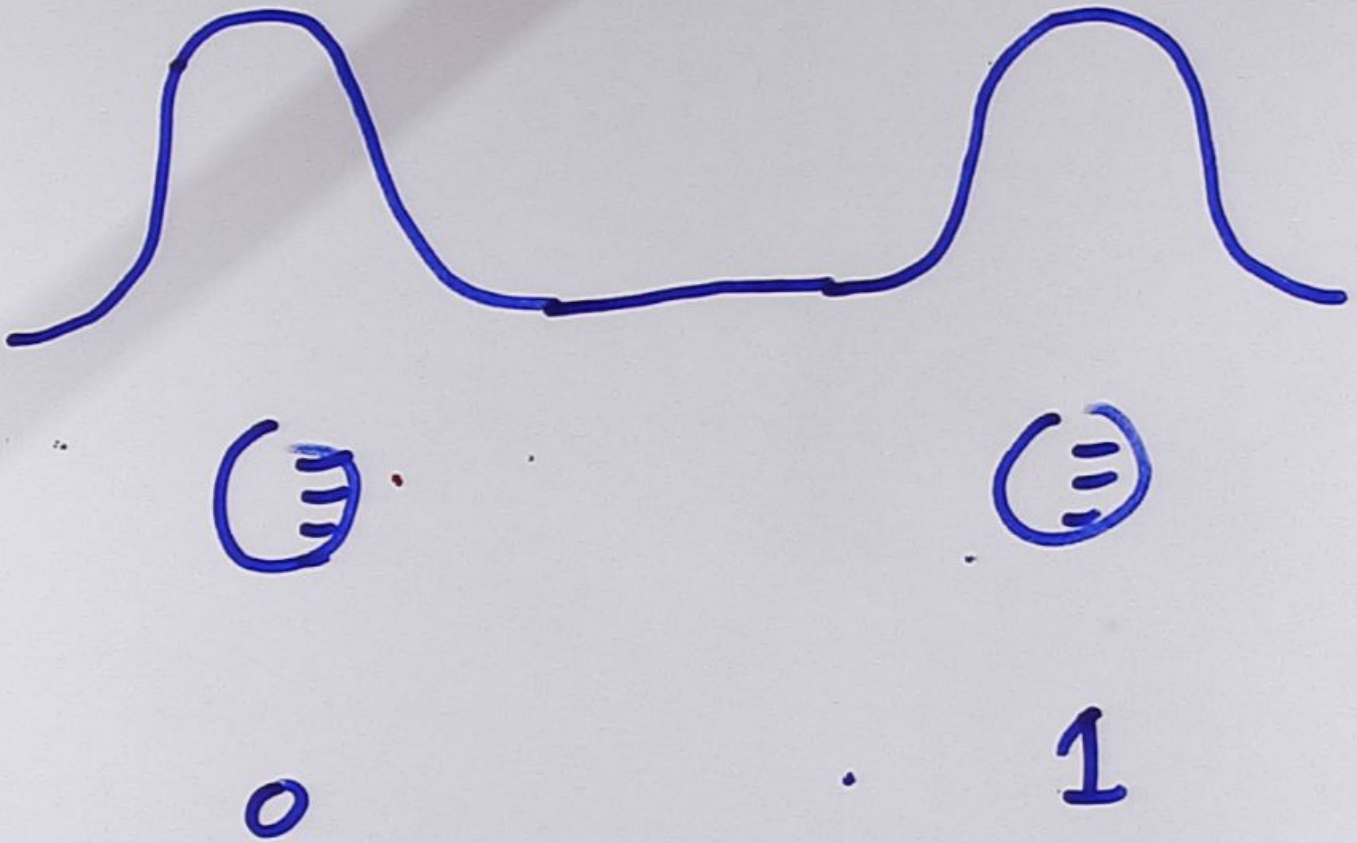
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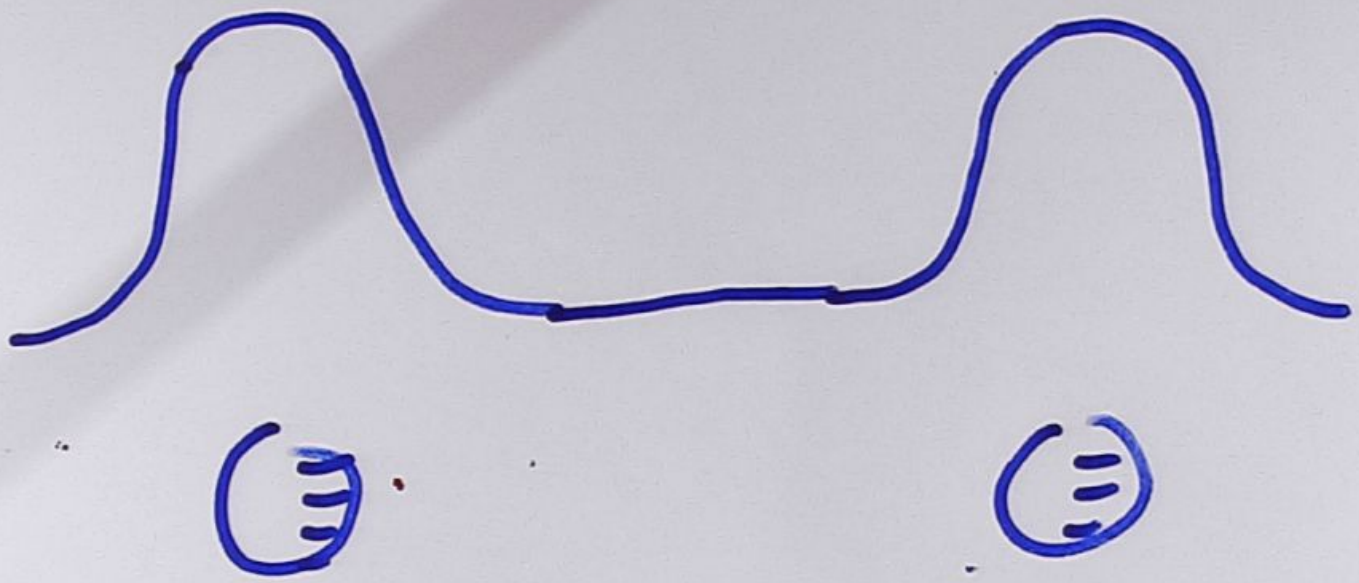

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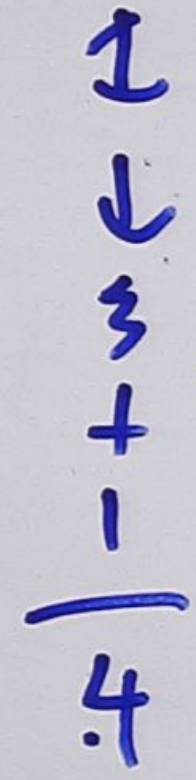
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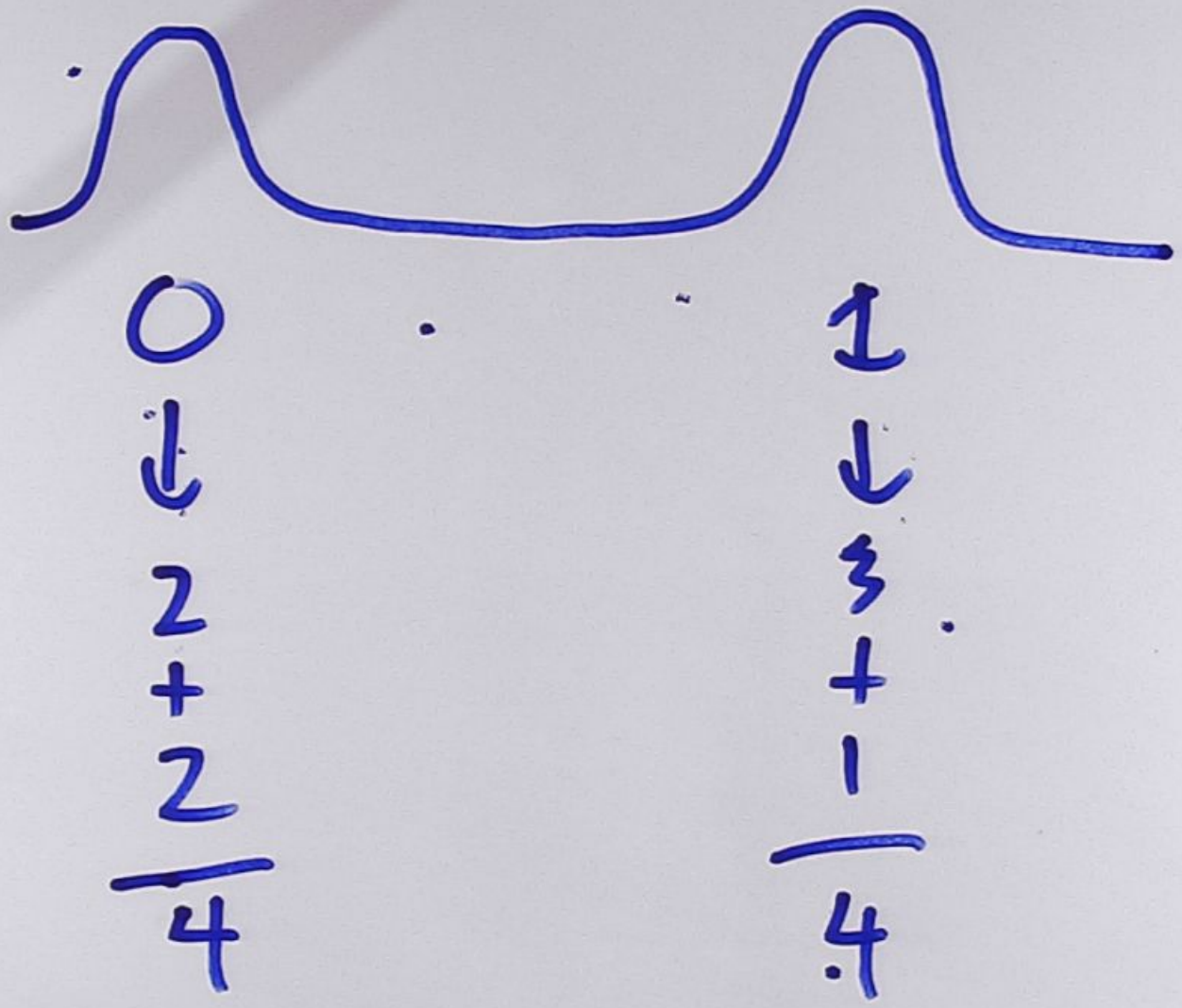
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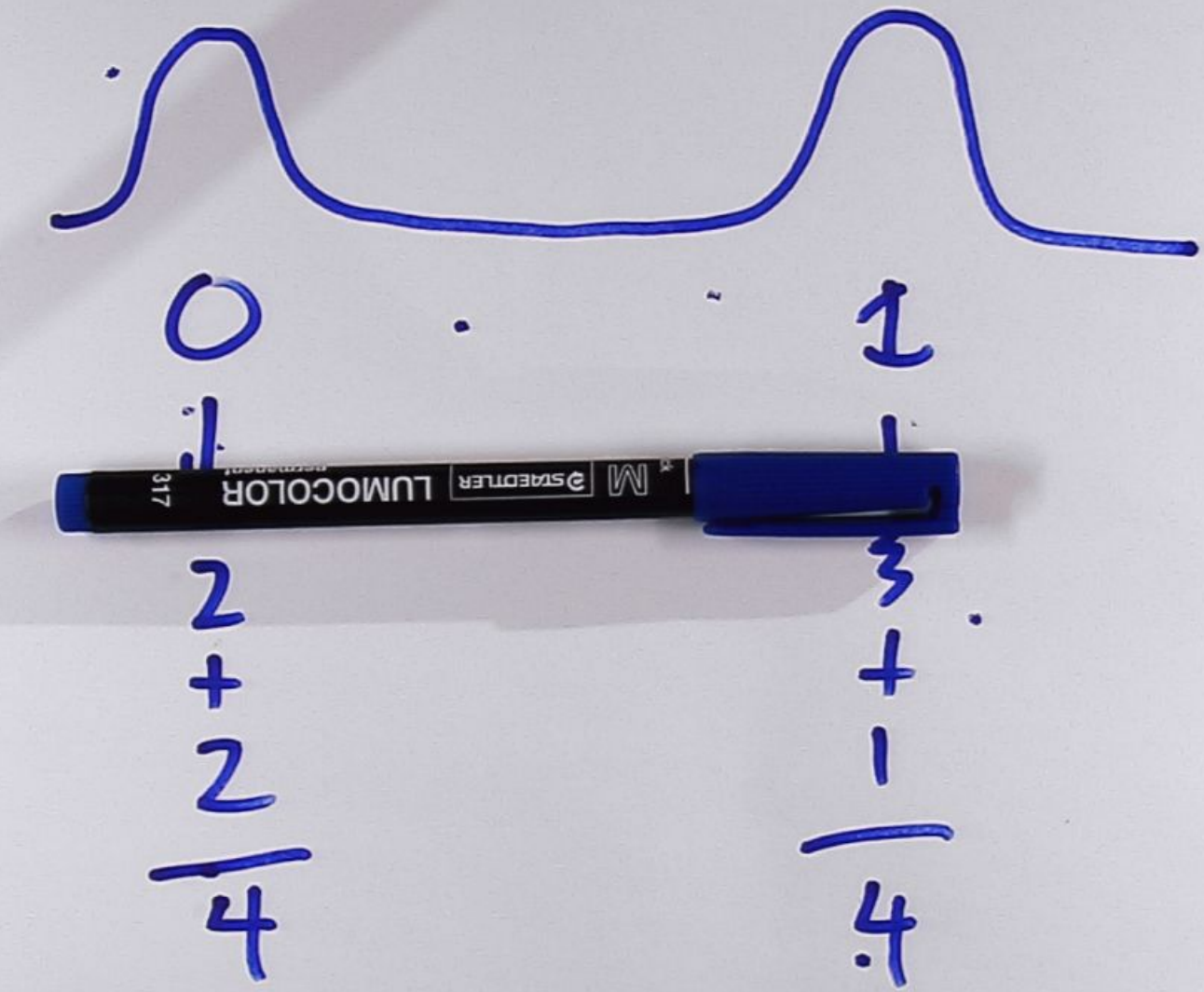
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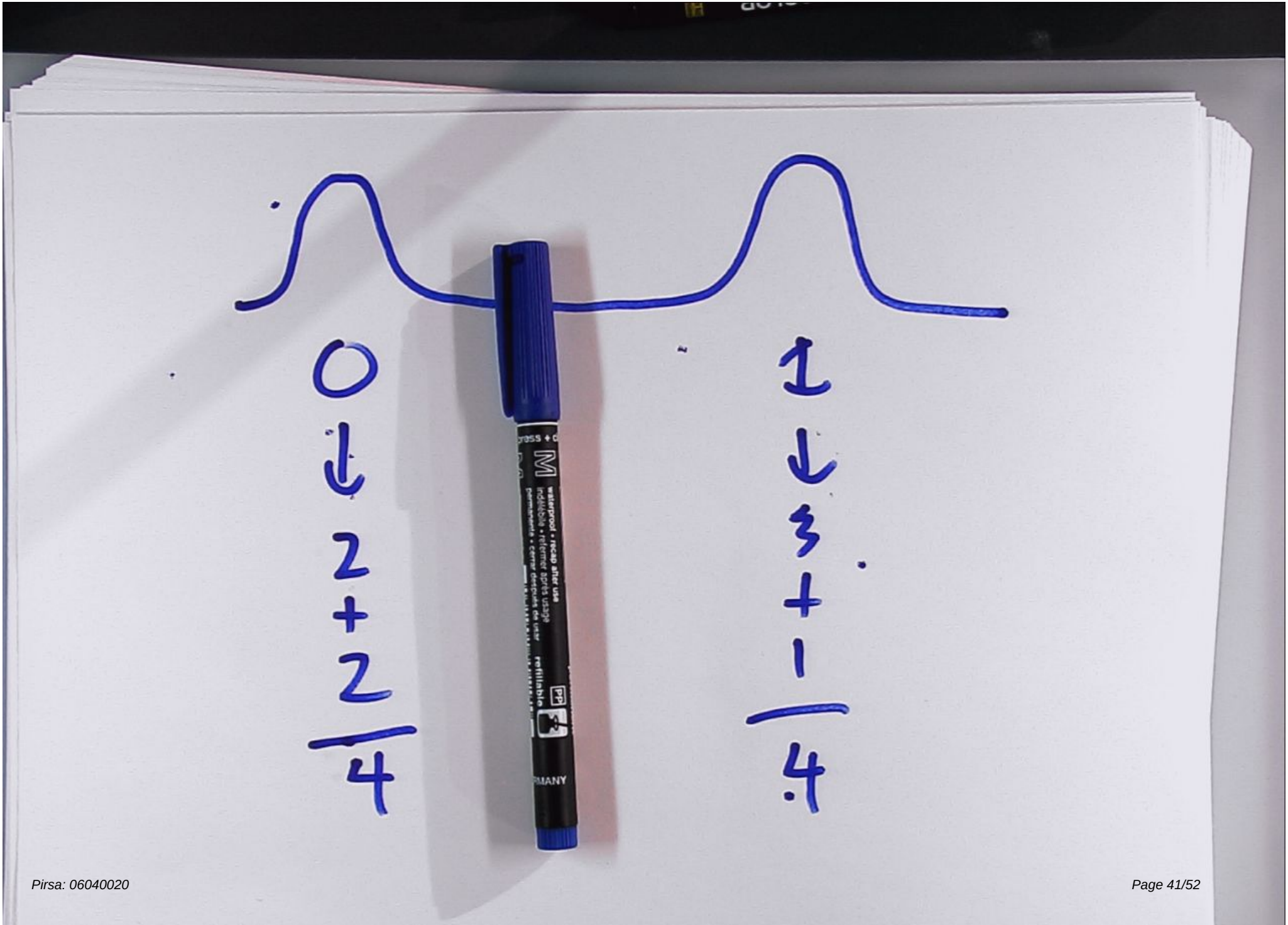
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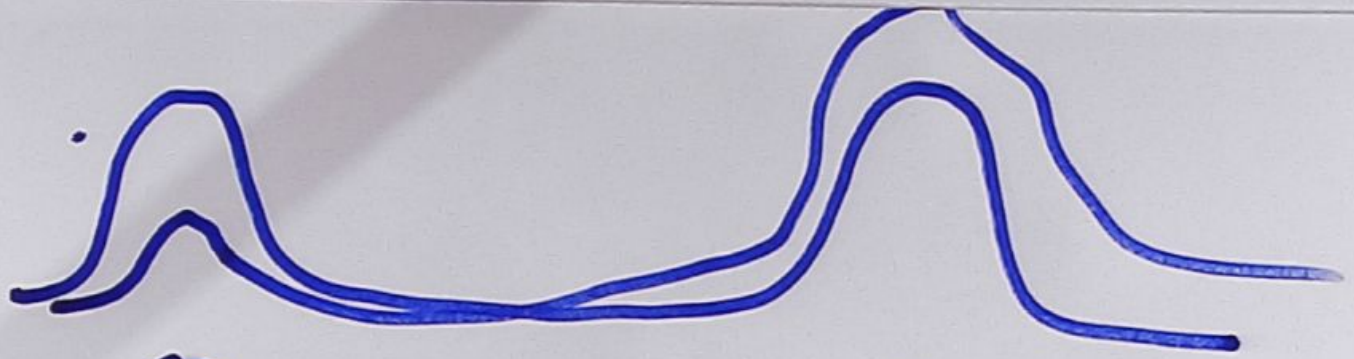

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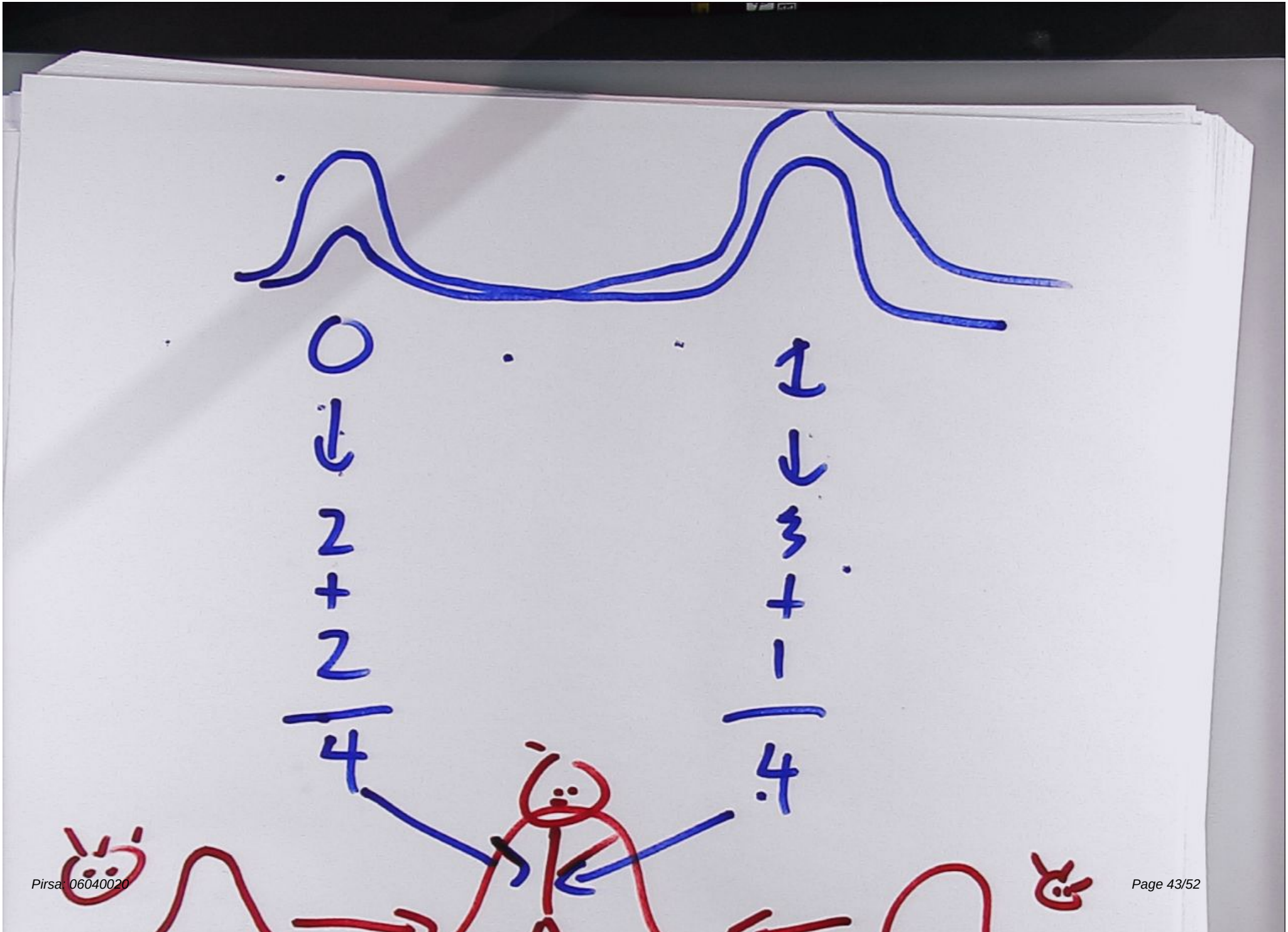
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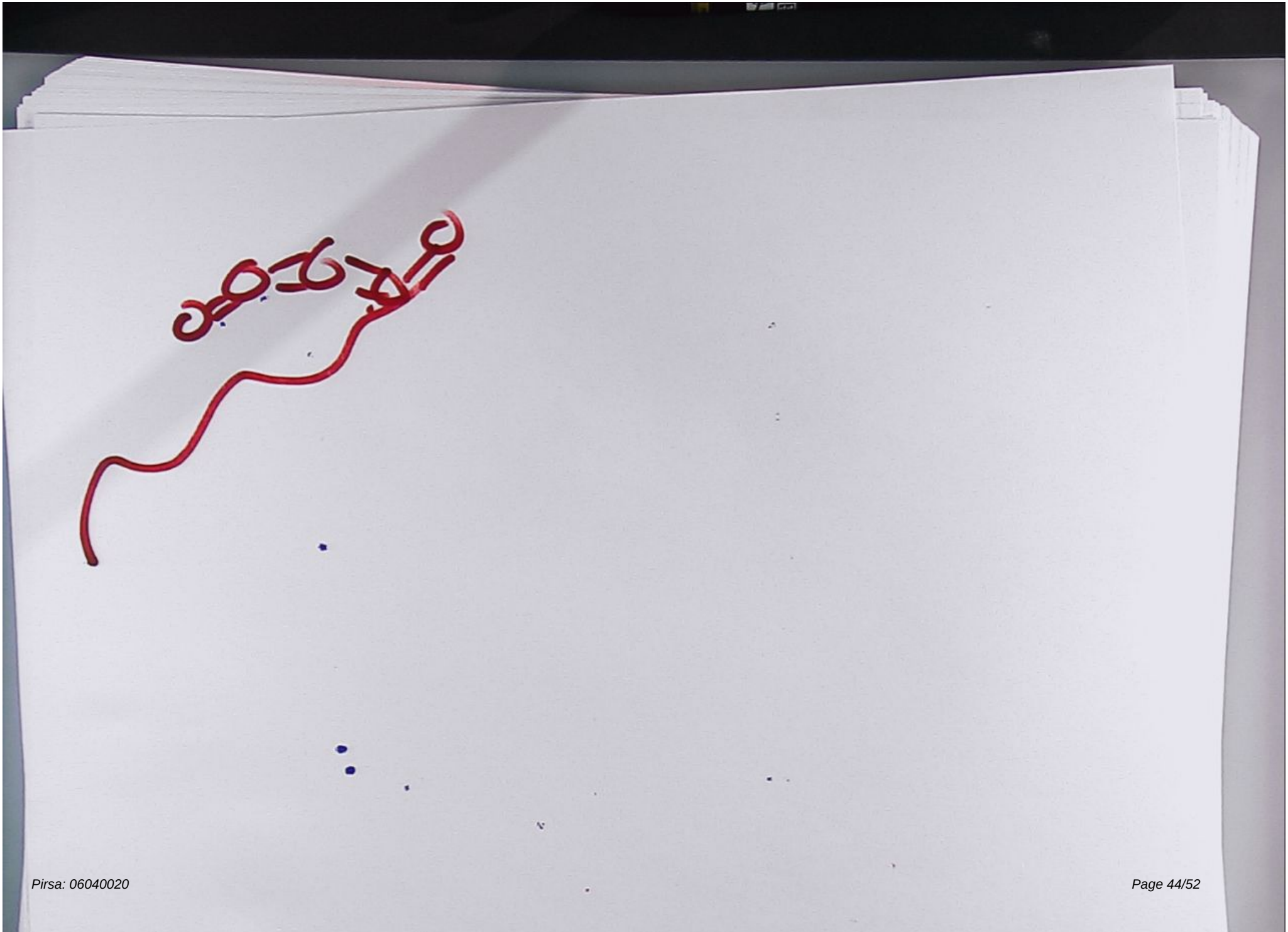

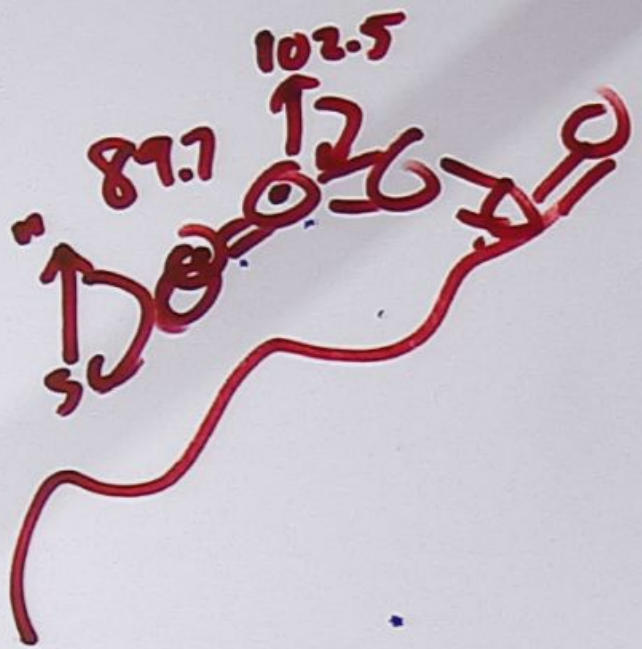
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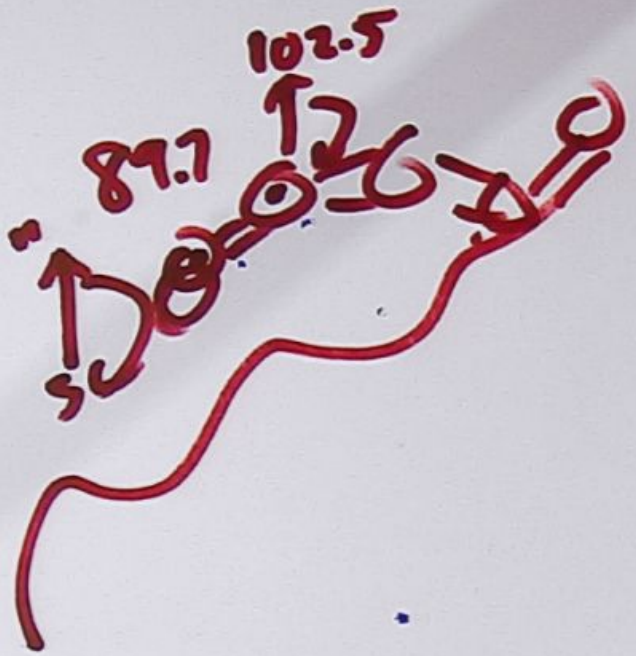
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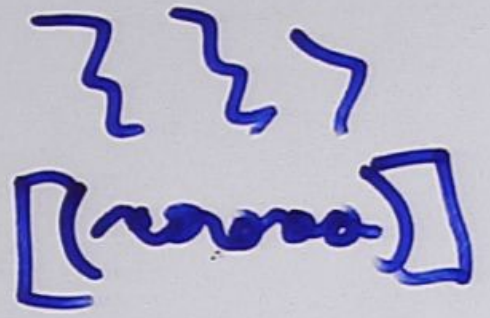

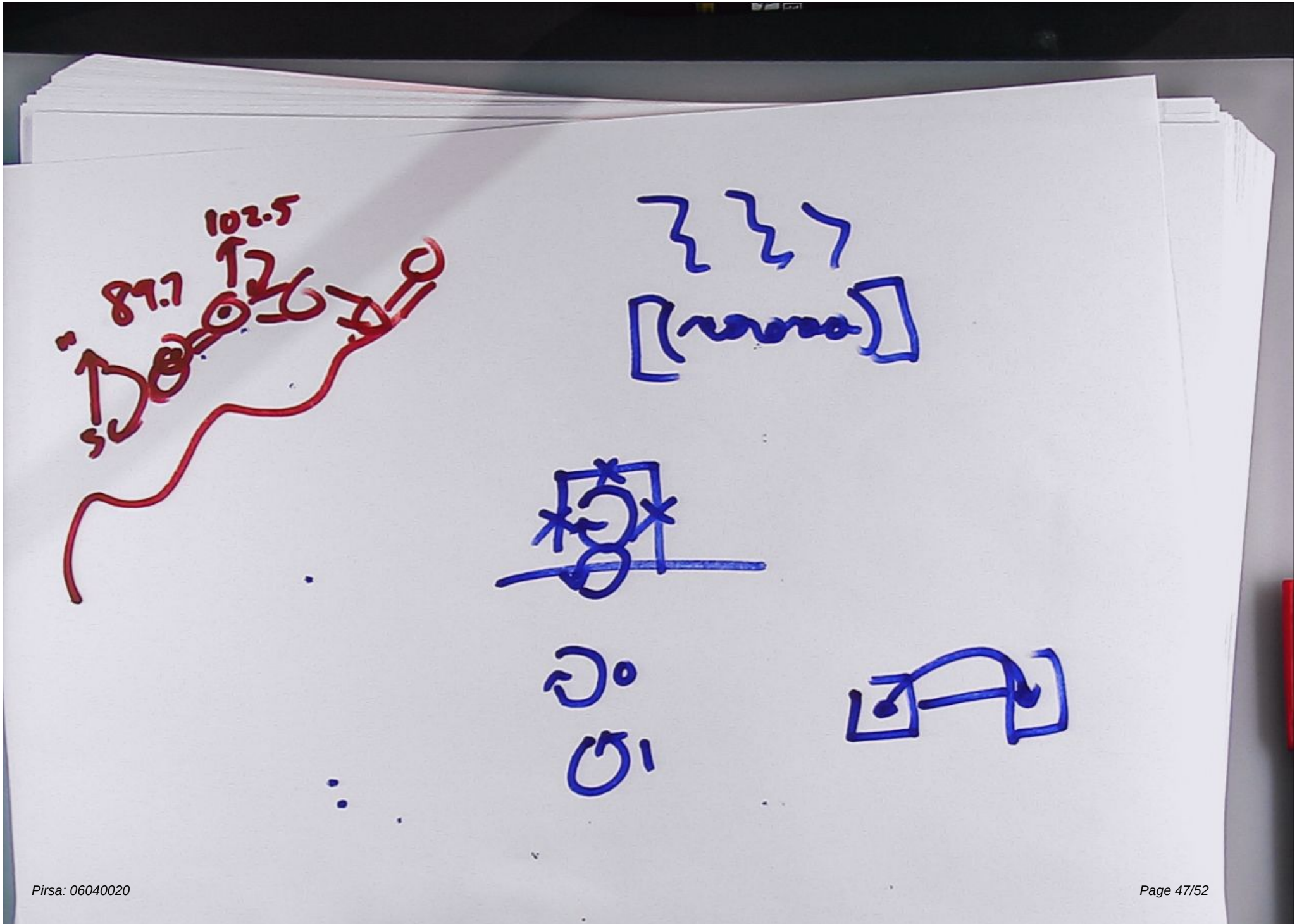
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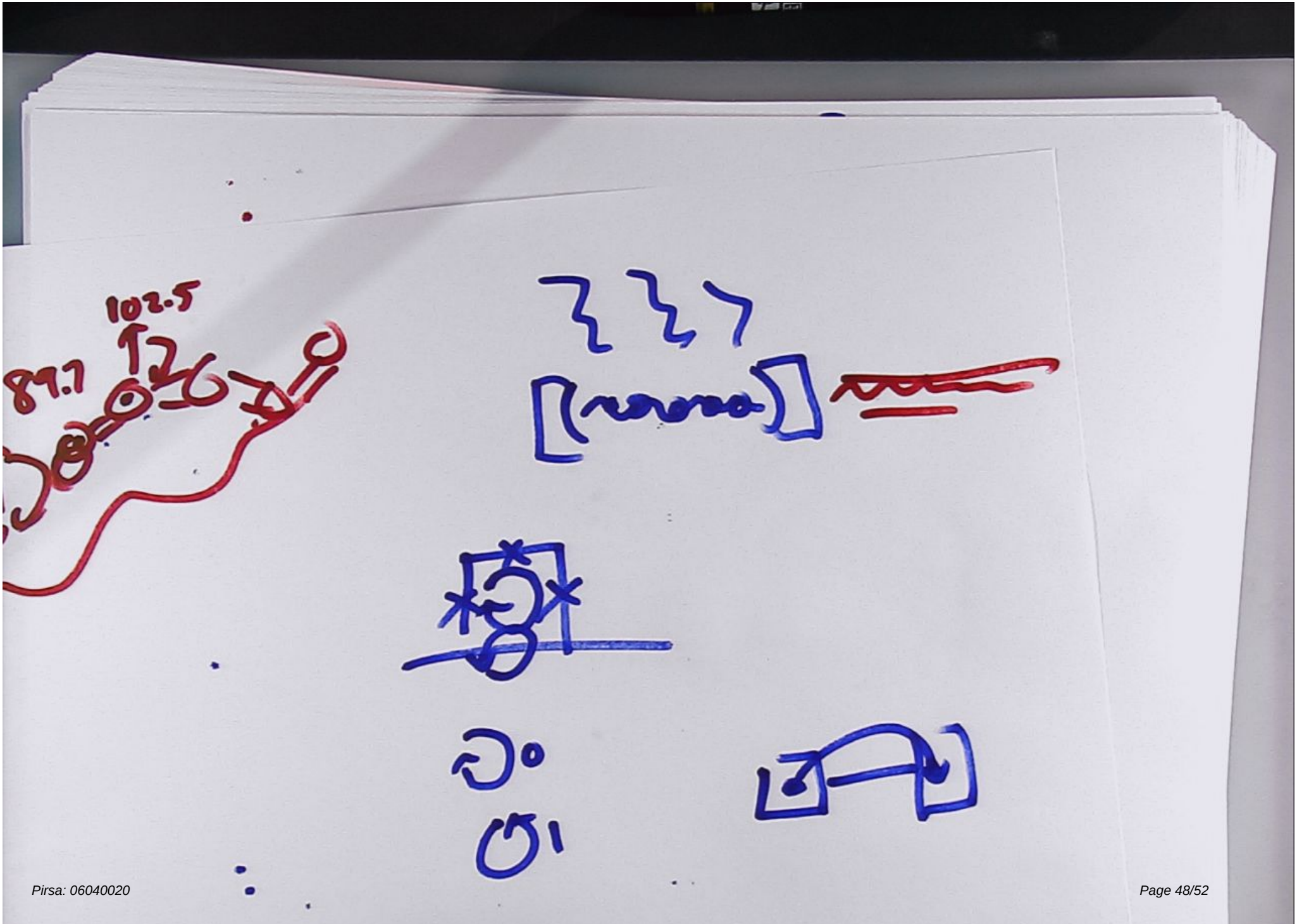
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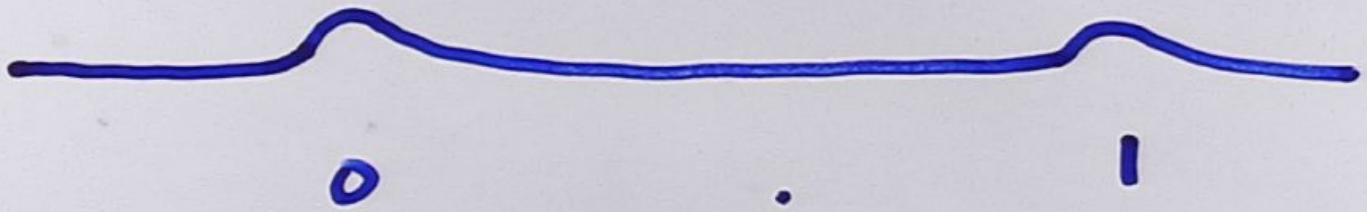
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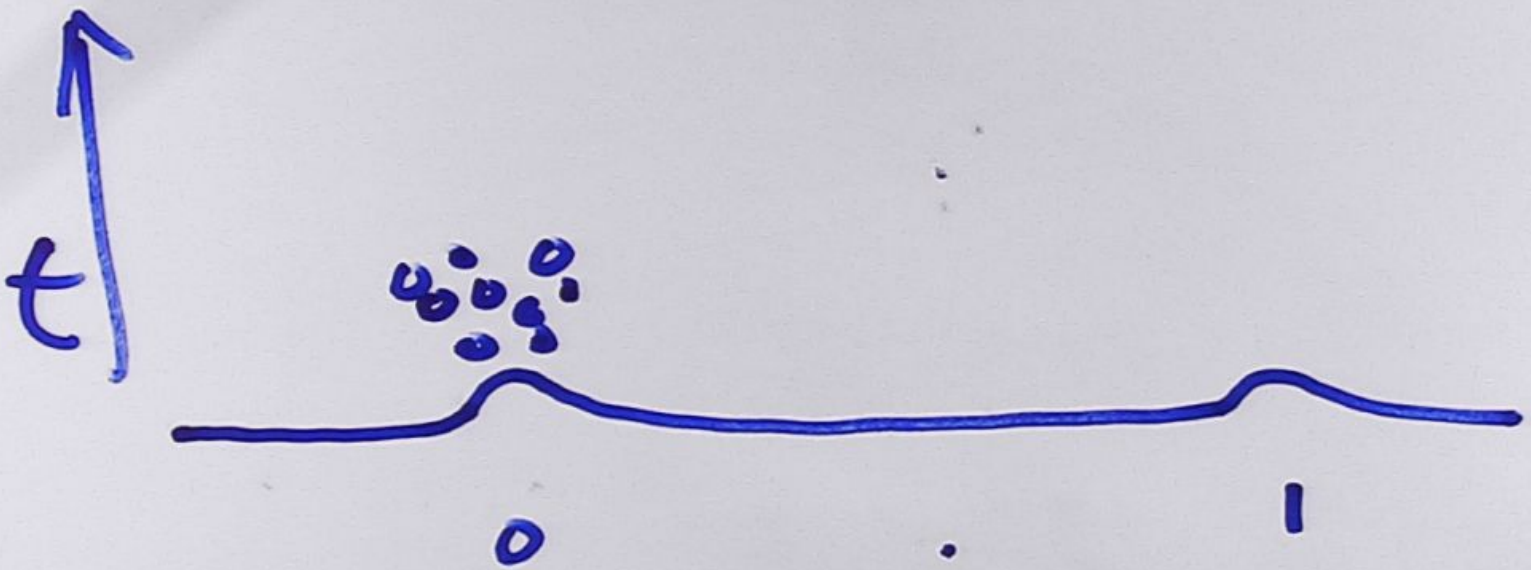
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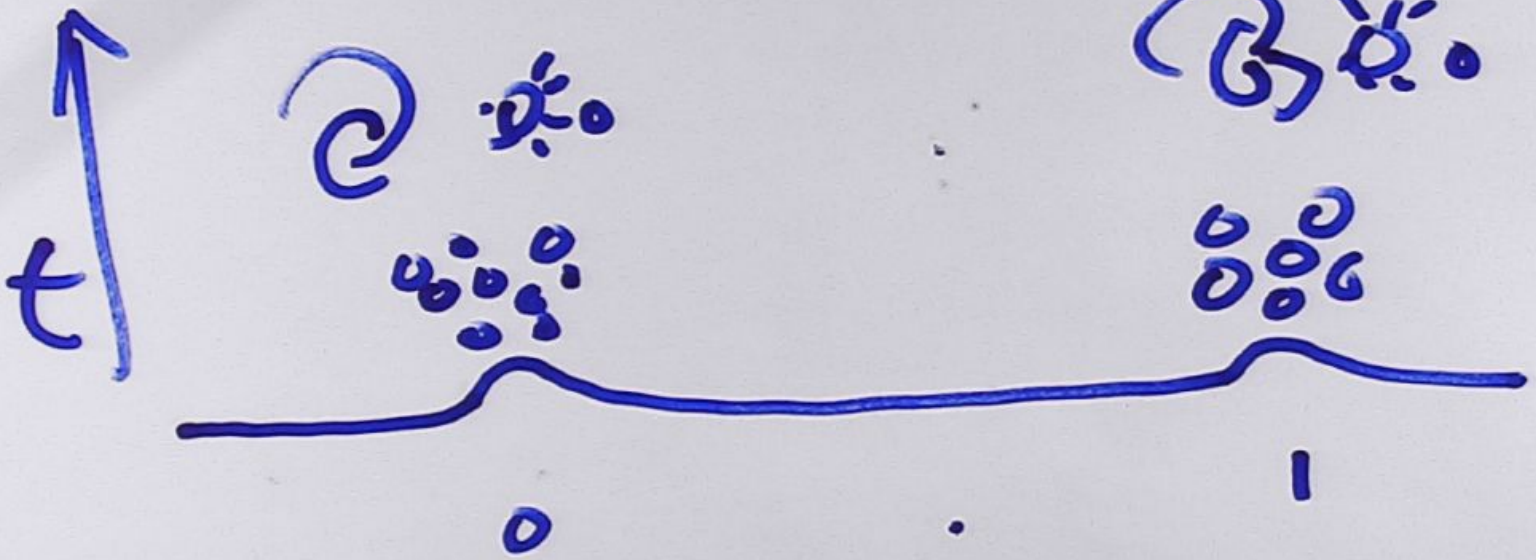
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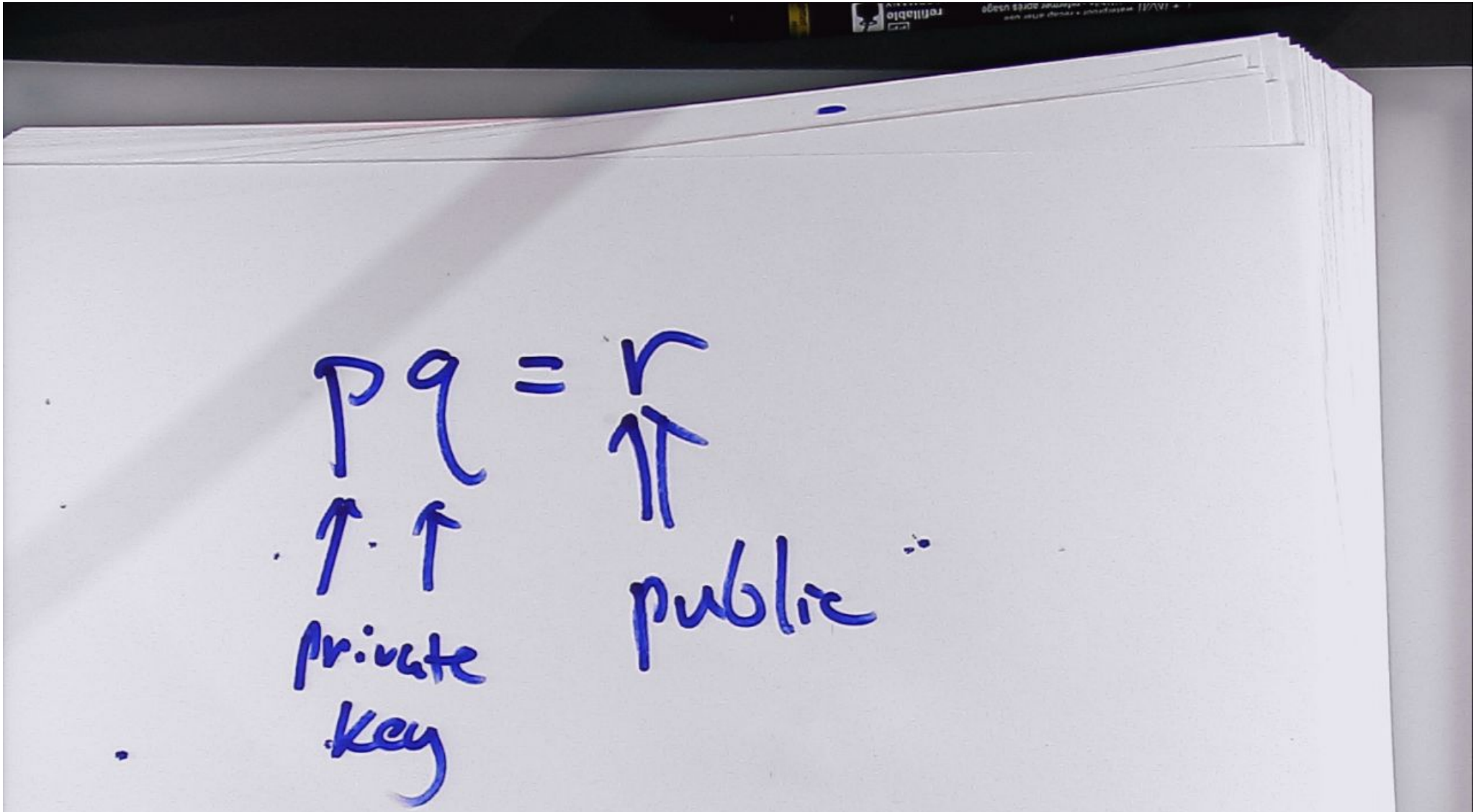
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